WHAT IS CLAIMED IS:

1. A wafer boat for supporting silicon wafers, the wafer boat comprising:

a ceramic body having at least one wafer support structure sized to support a silicon wafer thereon;

a ceramic coating disposed on a surface of the wafer support structure, the ceramic coating having an impurity migration preventing thickness and a wafer contact surface, the wafer contact surface having a post coating surface finish;

wherein the post coating surface finish of the wafer contact surface substantially prevents slip in the silicon wafers.

2. The wafer boat of Claim 1 wherein the wafer support structure comprises at least one wafer slot sized to receive a silicon wafer therein.

3. The wafer boat of Claim 1 wherein the post coating surface finish of the wafer contact surface substantially prevents slip in silicon wafers of 300mm diameter or greater.

4. The wafer boat of Claim 1 wherein the post coating surface finish of the wafer contact surface substantially prevents slip in silicon wafers during thermal operations reaching temperatures of 720 degrees centigrade or greater.

5. The wafer boat of Claim 1 wherein the ceramic body comprises one of quartz, silicon carbide (SiC) and recrystallized SiC.

6. The wafer boat of Claim 1 wherein the ceramic coating comprises a SiC.

7. The wafer boat of Claim 1 wherein the impurity migration preventing thickness of the ceramic coating is greater than or substantially equal to 30 microns thick.

8. The wafer boat of Claim 1 wherein the impurity migration preventing thickness of the ceramic coating is nominally 60 microns thick.

9. The wafer boat of Claim 1 wherein the ceramic coating has a purity level of substantially 1 ppm or less.

10. The wafer boat of Claim 1 wherein the post coating surface finish of the wafer contact surface is less than or substantially equal to 0.4 microns.

11. The wafer boat of Claim 1 wherein the wafer boat is a vertical wafer boat.

12. The wafer boat of Claim 2 comprising:

a generally horizontal base;

a support rod extending generally vertically from the base and having at least a pair of arms extending generally parallel relative to the base, the pair of arms defining the at least one wafer slot.

13. The wafer boat of Claim 12 wherein the support rod comprises a plurality of arms defining a plurality of slots each sized to receive a silicon wafer, each slot having the ceramic coating disposed thereon to define a plurality of wafer contact surfaces, each wafer contact surface having the post coating surface finish.

14. The wafer boat of Claim 12 wherein the support rod comprises a plurality of support rods.

15. The wafer boat of Claim 12 comprising a top plate attached to the upper distal end of the support rod.

16. The wafer boat of Claim 12 wherein the base comprises a stress relief slot and a location notch.

17. A method of making a wafer boat for supporting silicon wafers, the method comprising:

providing a ceramic wafer boat body having at least one wafer support structure sized to support a silicon wafer thereon;

coating a surface of the wafer support structure with a protective ceramic coating ; and

finishing the protective ceramic coating to define a wafer contact surface, the protective ceramic coating having an impurity migration preventing thickness and the wafer contact surface having a post coating surface finish, wherein the post coating surface finish substantially prevents slip in the silicon wafers.

18. The method of Claim 17 wherein coating comprises a chemical vapor deposition (CVD) process.

19. The method of Claim 17 wherein finishing comprises one of a machining operation and a laser cutting operation.

20. The method of Claim 17 wherein providing comprises providing one of a quartz body, a SiC body and a recrystallized SiC body.

21. The method of Claim 17 wherein coating comprises coating with SiC.

22. The method of Claim 17 wherein the finishing comprises finishing the ceramic coating to an impurity migration preventing thickness of substantially 30 microns or greater.

23. The method of Claim 17 wherein finishing comprises finishing the ceramic coating to an impurity migration preventing thickness of 60 microns nominal.

24. The method of Claim 17 wherein coating comprises coating with a ceramic coating having a purity level of less than or substantially equal to 1 ppm.

25. The method of Claim 17 wherein finishing comprises finishing the ceramic coating to define a wafer contact surface having a post coating surface finish of less than or substantially equal to 0.4 microns.

26. The method of Claim 17 comprising:

dimensionally undersizing the critical dimensions of the ceramic body by a predetermined amount; and

compensating for the undersized critical dimensions by the predetermined thickness of the protective coating applied.

27. The method of Claim 26 comprising:

processing SiC in molds to produce a set of green body parts, which include a plurality of support rods, a base and a top plate;

subjecting the set of body parts to a recrystallization process;

assembling the set of body parts to form the unfinished ceramic body;

impregnating the ceramic body with high purity silicon metal;

sandblasting the ceramic body;

machining of the ceramic body;

CVD coating the entire body with high purity SiC; and

post CVD finishing the ceramic body to define the wafer contact surfaces.